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AGENDA

Applicants respectfully request a telephone interview with the Examiner on July 2, 2006 at 1pm. Applicants would like to discuss patentability of the claims, focusing on claims 69-91 and 93-95.

Rejection in View of deCharms

The claimed invention of the present application is generally directed to a system with an atlas and a method for creating an atlas with nodes including values representative of magnetic resonance properties of a magnetic resonance scan (MR) and probability data relating to tissue type.

In contrast, the deCharms reference is generally directed to computer executable software and a device for guiding brain activity training. The invention takes data corresponding to brain activity measurements in internal voxels of a brain, and determines information relevant to brain activity training.

Applicants respectfully submit that deCharms does not disclose an atlas having "magnetic property values corresponding to a tissue type at one or more voxels" as recited in claim 75 or that "...correspond to a first tissue type at one voxel and a second tissue type at a second voxel," as recited in claim 76. Further, deCharms does not disclose an atlas having "a plurality of nodes each configured to store values of a statistical representation of at least one magnetic property value as determined by magnetic resonance imaging and a statistical representation of at least one tissue type prior probability value corresponding to a tissue type for each of a plurality of corresponding voxels of a plurality of subjects," as recited by claims 78-80. Additionally, deCharms does not disclose, "at least one node of said plurality of nodes configured to store a prior probability of a tissue type located at said voxel corresponding to said node and a statistical value of a magnetic property value of said tissue type located at said voxel corresponding to said node," as recited by claims 88-91. deCharms also fails to disclose the method of claims 93-95 which use such an atlas. deCharms discloses relating scan images to the physical structure of the brain, but deCharms does not disclose the atlas as specified in the claims noted above.

Rejection in View of VanEssen

VanEssen is generally directed to a method for reconstructing surfaces and analyzing surface and volume representations of the shape of an object or structure corresponding to image data. In this method the structure is modeled as one or more physically distinct compartments.

Applicants respectfully submit that VanEssen does not disclose an atlas having a plurality of nodes configured to store a magnetic property value as specified in independent claims 69, 77, 81, 92 and 93, and dependent claims 70-76, 82-87, and 94-95. VanEssen further fails to disclose an atlas having a plurality of nodes configured to store values of a statistical representation of at least one magnetic property value as specified by independent claims 78 and 88, and dependent claims 79-80 and 89-91. VanEssen refers to "nodes" as vertices which are points on a surface and are not nodes in an atlas. In column 34, lines 5-22, VanEssen describes sub-cortical segmentation using a single intensity threshold algorithm, and in line 16, a

previously segmented atlas is referenced and is constructed from a single property. This atlas is not the same as the atlas of the present invention. Additionally, VanEssen does not disclose an atlas with a plurality of nodes configured to store tissue type prior probability values according to independent claims 77, 78, 88 and dependent claims 79-80, 83, 84, and 89-91.

deCharms and VanEssen et al. both fail to disclose the notion of constructing an atlas to include nodes with tissue type probability information, magnetic property values, and location information. Since the prior art fails to disclose such an atlas, alignment of an MR scan by referring to such an atlas cannot occur.

In contrast, the Applicants' claimed invention utilizes information regarding the probability that a certain tissue type is at a location (node) in a given subject together with a determination of the type of tissue in that location -- by using at least one magnetic property value -- to more accurately align and/or segment an MR scan.

Additionally, deCharms and VanEssen et al. also fail to disclose, as claimed by the Applicants, the notion of constructing an *a priori* nodal atlas to include information about both location in three dimensional anatomic space as well as tissue type probability information based on the magnetic resonance properties of corresponding nodes and/or neighboring nodes, and transforming images obtained using the varying instructions of individual imaging instruments to match a reference nodal atlas by optimizing the probability match of both spatial location and magnetic resonance properties between the *a priori* determined nodal atlas and the subsequent voxel constrained magnetic resonance image. Since the prior art fails to disclose such a nodal reference atlas, alignment of the voxels of a subsequent MR scan and/or segmenting the voxels of a subsequent MR scan of a subject by reference to such an *a priori* atlas, the applicant's claims are novel and non-obvious.